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BACTERIA CRITERIA

ENVIRONMENTAL PROTECTION AGENCY

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BACTERIA CRITERIA

Division of Water Quality Standards
Washington, D.C.

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BACTERIA SUMMARY

NTAC

PWS	2000/100 ml fecal 10,000/100 total	Permissible	20/100 100/100	desirable

Rec. Primary: log mean 200/100; not more than 10% of samples to exceed 400/100.
Secondary: log mean 1,000/100; not more than 10% of samples to exceed 2,000/100/

Shellfish Median 70/100 total, not more than 10% of samples to exceed 230/100 (5-tube decimal dilution test) or 330/100 (3-tube decimal dilution test) in areas most probably exposed to fecal contamination during most unfavorable hydrographic and pollution conditions. (National Shellfish Sanitation Program Manual of Operation Standards.)

Alabama (EPA Proposal.)

PWS: NTAC levels.

Primary contact recreation: 100/100 geometric mean fecal in coastal. 200/100 fecal in fresh. Where the geometric mean exceeds these levels, bacterial quality is acceptable only if a second detailed sanitary survey and evaluation discloses no significant public health rish.

F & WL: Geometric mean fecal 1000/100; no sample to exceed 2,000/100.

Shellfish: National Shellfish Sanitation Program Manual of Operations limits incorporated by reference.

Alaska A (PWS without treatment): Monthly average less than 50/100 total coliform.

B (PWS with treatment): Monthly average less than 2000/100 total coliform; not more than 20% of samples should exceed this number.

C (Primary contact rec.): Monthly average less than 1000/100 total coliform, with 20% of samples not to exceed this number. No sample shall exceed 2,400/100.

D (F & WL) - Same as "C."

E (Shellfish)- National Shellfish Sanitation Program Manual of Operations limits incorporated by reference.

F (Agricultural) - Average less than 1,000/100 with 20% of samples not to exceed 2,400/100.

G (Industrial) - Limits for "C" should be met when worker contact is required.

Arizona

A (Domestic & Industrial): All waters except primary contact recreation, geometric mean 1000/100 fecal, nor more than 10% of samples exceed 2,000/100.

B (Primary contact recreation): Geometric mean 200/100 fecal, nor more than 10% of samples exceed 400/100.

C (F & W.): Same as A-B.

Arkansas

Primary contact recreation: Monthly arithmetic average of 1000/100 total coliform; nor exceed this number in more than 20% of samples per month; nor exceed 2,400/100 any day except during storm water run-off, provided that no fecal contamination is known to be present.

Other waters: Monthly average 5,000/100 total, nor exceed this number in more than 20% of samples per month; nor exceed 20,000/100 in more than 5%.

California

Criteria are assigned by specific region. The criteria below are representative.

Shellfish: National Shellfish Sanitation Program Manual of Operations limits.

Primary contact recreation: Average 1000/100 total coliform; not more than 20% of samples exceed this number; no sample over 10,000/100. Other regions employ 200/100 fecal criteria.

Fish handling: E. coliform organisms less than 700/100; not more than 5% exceed 700/100. Various regions specify no change over background levels or none due to human wastes.

Colorado

A (PWS): Log mean 1000/100 fecal, nor exceed 2000/100 in more than 10% of samples during month.

B.1. (Cold water fishery): Same as A.

B.2. (Warm water fishery): Same as A.

B.3. (Body contact sports): Monthly average 1000/100 total coliform; nor exceed this in more than 20% of samples, nor exceed 2,400 in any sample. Also, 100/100 fecal coliform and 20/100 fecal streptococcus (both as average of 5 samples within month).

Connecticut

A (PWS): Median 100/100 total coliform nor more than 500/100 in more than 10% of samples.

B (Bathing): Median 1000/100 total, nor exceed 2,400 in more than 20% of samples.

Connecticut

C (F & WL, secondary contact recreation): 30 day average 5,000/100 total coliform,nor exceed this in more than 20% of samples.

D (Navigation, Industrial): None in concentrations that would impair assigned usages.

Delaware

Criteria are assigned by river basin. The criteria listed below are representative.

Body contact recreation: Monthly arithmetic average 1000/100 total coliform during the recreation season; nor exceed this number in more than 20% of samples per month; nor exceed 2,400/100 on any day.

F & WL: Monthly arithmetic average not exceed 2,400/100 total coliform.

Shellfish: Median coliform 70/100; not more than 10% of samples oridinarily exceed 230/100 (5-tube) or 330/100 (3-tube) in areas most probably exposed to fecal contamination during most unfavorable hydrographic and pollution conditions.

District of Columbia

Criteria are assigned to specific waters. Potomac River, Md. to Key Bridge--Primary contact recreation as a future anticipated use (1975): Fecal coliform not to exceed 240/100 in 90% of samples. Potomac River, Key Bridge to D.C.-Prince George's County Line--Secondary contact recreation: Fecal coliform not to exceed a geometric mean of 1,000/100 nor equal or exceed 2,000/100 in more than 10% of samples. Rock Creek (wading in upper reaches): Fecal coliform not to exceed 200/100; not applicable during or immediately following rainfall.

Florida

(PWS): Monthly average 1,000/100 fecal; nor exceed this number in more than 20% of the samples per month; nor exceed 2,400/100 on any day.

(Shellfish): Median coliform not exceed 70/100, not more than 10% of samples exceed 230/100 in areas most probably exposed to fecal contamination during most unfavorable hydrographic and pollution conditions.

(Body contact recreation): Monthly average 1000/100 total coliform; nor exceed this number in more than 20% of samples; nor exceed 2,400/100 ml on any day.

Guam

PWS: No discharges. To extent discharges are occurring, fecal coliform not exceed arithmetic mean 20/100 ml.

Recreation: Fecal coliform not exceed arithmetic mean 200/100, nor exceed 400/100 in more than 10% of samples.

Georgia

(1) (PWS)

(a) (Requiring disinfection only): Mean 50/100 fecal; not exceed 200/100 in more than 5% of samples during 90 days.

(b) (Requiring treatment): Mean 5000/100 fecal; not exceed 20,000/100 in more than 5% of samples during 90 days.

(2) (Recreation): Mean 1,000/100 fecal; not exceed 4,000/100 in more than 5% of samples during 90 days.

(3) (F & WL): Same as (1)(b).

Shellfish: Median total coliform 70/100 not more than 10% exceed 230/100 (5-tube) or 330/100 (3-tube); not in areas most probably exposed to fecal contamination during most unfavorable hydrographic and pollution conditions.

(4) (Agriculture): Mean 10,000/100 fecal; not exceed 40,000/100 in 5% of samples during 90 days.

(5) (Ind.): No coliform criteria.

(6) (Nav.): Same as (4).

Hawaii

AA (nearly pristine): Median 70/100 total, nor exceed 230/100 at any time.

A, 1 and 2 (all recreation; aesthetics): Total coliform median 1000/100, nor more than 10% of samples exceed 2,400/100. Fecal: Arithmetic average 200/100 during 30 days, nor more than 10% exceed 400/100. Drinking and food processing following simple chlorination, fecal arithmetic mean 20/100.

B (small boat harbors-commerical, bait fishing); Fecal arithmetic average 400/100; nor more than 10% exceed 1000/100.

Idaho

Bacteria criteria are adopted for individual waters.
Most rivers: Average 1000/100 fecal coliform; 20% of samples not to exceed 2,400/100.
Lower Snake, Palouse, Spokane and Moyie Rivers: Average 240/100 fecal coliform; Pend Oreille River, Pend Oreille Lake, Priest Lake and Coeur D'Alene Lake: Average 240/100 along shore line of lakes, 50/100 in main body of lake or stream.

Illinois

Criteria are established for individual waters. The following criteria are representative.

PWS: Monthly average 5,000/100 total coliform nor exceed this in more than 20% of samples; nor exceed 20,000/100 in more than 5%

Illinois — Primary contact recreation: Monthly geometric mean fecal coliform not exceed 200/100; nor more than 10% exceed 400/100.

Secondary contact recreation: Monthly geometric mean fecal 1000/100; nor more than 10% exceed 2,000/100.

Indiana — PWS: Monthly average total coliform 5,000/100; nor more than 20% of samples exceed this; nor exceed 20,000/100 in more than 5% of samples.

Recreation:

Whole body contact: Monthly geometric mean fecal not exceed 200/100, nor exceed 400/100 in more than 10% of samples.

Partial body contact: Monthly geometric mean not exceed 1000/100, nor exceed 2000/100 in more than 10% of samples.

Iowa — a. (PWS): Unsatisfactory when (1) sanitary survey indicates probable presence of objectionable bacteria-bearing wastes, or (2) 2000/100 fecal coliform limits exceeded during low flow when such bacteria are from pollution by sewage.

c. (recreation--whole body contact): Unsatisfactory when a sanitary survey indicates the probably presence of objectionable bacteria-bearing wastes, or 200/100 fecal coliform limits are exceeded during low flow when such bacteria are from pollution from sewage.

Kansas — PWS: 2,000/100 fecal coliform per sample.

Recreation including fishing: 200/100 fecal coliform per sample.

Body contact recreation: Monthly log mean fecal 200/100; no more than 10% of samples per month exceed 400/100 fecal.

Kentucky — PWS: Monthly arithmetical average 5,000/100 total; not exceed this number in more than 20% of the samples; nor exceed 20,000/100 in more than 5% of the samples.

Recreation including body contact: Average 1,000/100 total coliform; not exceed this number in 20% of the samples; nor exceed 2400/100 on any day. If the level of total is exceeded, then fecal: During May-October, 200/100 fecal monthly geometric mean, nor exceed 400/100 in more than 10% of the samples, and during November-April, 1,000/100 fecal monthly geometric mean nor exceed 2,000/100 in more than 10% of the samples.

Louisiana — Criteria are assigned by river basin. The criteria listed below are representative.

Most fresh water areas, aquatic life and recreation: Monthly median of total coliforms not exceed 1,600/100 ml, nor exceed 5,420/100 ml in more than 10% of the samples.

Coastal waters: Monthly median of total coliforms not exceed 70/100 ml, nor exceed 230/100 in more than 10% of the samples.

Mississippi River, Zone 2: Monthly median of total coliforms not exceed 230/100, nor exceed 790/100 in more than 10% of the samples.

Sabine River, Zone 2: Monthly median of total coliforms not exceed 542/100, nor exceed 1750/100 in more than 10% of the samples.

Maine

A (highest classification, including PWS after disinfection): 100/100 total coliform bacteria.

B-1 (body contact recreation, PWS after treatment): 300/100 total, 60/100 fecal.

B-2 (body contact recreation): 1,000 total, 200/100 fecal.

C (recreational boating, F & WL): 5,000/100 total, 1,000/100 fecal.

D (power, nav., ind.): Coliform only in those amounts which Commission determines will not indicate a condition harmful to public health or impair assigned usages.

SA (all clean usages): Median total coliforms not exceed 70/100, nor more than 10% of the samples exceed 230/100. Median fecal not exceed 15/100, nor more than 10% of samples exceed 50/100.

SB-1 (all clean uses, including shellfishing): Shellfish areas same as SA; non-shellfish areas median coliform 240/100, nor more than 10% of samples exceed 500/100, and fecal not exceed 50/100 nor more than 10% exceed 150/100.

SB-2 (water contact recreation, shellfishing, etc.): Shellfish areas same as SA; non-shellfish areas median coliform 500/100 nor more than 10% of the samples exceed 1,000/100, and fecal not exceed 100/100 nor more than 10% exceed 200/100.

SC (recreational boating, etc.; shellfish to be harvested for depuration purposes): Shellfish areas, median total not exceed 700/100 nor exceed 2,300/100 in more than 10% of the samples, and not exceed 150/100 fecal nor more than 10% exceed 500/100; non-shellfish areas, median total not exceed 1,500/100 nor exceed 5,000/100 in more than 10% of the samples, and not exceed 300/100 fecal nor more than 10% exceed 1,000/100.

SD (power, nav., ind.): Coliform only in those amounts which Commission determines will not indicate a condition harmful to public health or impair assigned uses.

Maryland

A (shellfish): MPN total coliforms less than 70/100; must comply with sanitary and bacteriological standards of Manual of Recommended Practices for Sanitary Control of Shellfish Industry.

B (PWS and water contact recreation): Monthly average not exceed 5,000/100, nor exceed this in more than 20% of samples, nor exceed 20,000/100 in more than 5%. Recreation--Acceptable when sanitary survey reveals no source of dangerous pollution and fecal not exceed 240/100. When fecal exceeds that, water acceptable only if second detailed sanitary survey discloses no significant public health risk.

C (F & WL): Same as B (water contact recreation).

Massachusetts

A (PWS): Not exceed 50/100 total coliform.

B (Water contact; PWS with treatment): Not exceed 1,000/100 total monthly average, nor exceed 2,400 in more than 20% of samples.

C (recreational boating, F & WL): None in concentrations that would impair any usages specifically assigned to this class.

D (aesthetics, power, nav., ind.): Same as C.

SA (body contact sports, shellfish): Median total 70/100, not exceed 230/100 in more than 10% of samples during month.

SB (bathing, F & WL, restricted shellfish): Median total 700/100, not exceed 2,300 in more than 10% of samples during month.

SC (recreational boating, F & WL): None in concentrations that would impair any usages specifically assigned to this class.

Michigan

A(1) (PWS): Great Lakes and connecting waters, monthly average not exceed 2000/100 total coliform, nor 20% of samples exceed that number. Other waters, monthly average not exceed 5,000 nor 20% of samples exceed that number, nor 5% of samples exceed 20,000.

A(2) (Ind.): Average not exceed 5,000 total nor 20% of samples exceed 10,000. Average fecal not exceed 1,000/100.

B(1) (body contact recreation): Average not exceed 1,000/100 total, nor 20% of samples exceed 5,000. Average fecal not exceed 100/100.

Michigan

B(2) (partial body contact recreation): Average not exceed 5,000 total nor 20% of samples exceed 10,000. Average fecal not exceed 1,000/100.

C (F & WL): Average not exceed 5,000 total nor 20% of samples exceed 10,000. Average fecal not exceed 1,000/100.

D (Agricultural): Same as C.

E (Commerical): Same as C, plus average fecal limit of 1,000/100.

Minnesota

(1) Domestic Consumption:

A (without treatment): Total coliform MPN 1/100.

B (with simple chlorination): Total coliform MPN 50/100.

C (with treatment): Total coliform MPN 4,000/100.

D (with additional treatment): Total coliform MPN 4,000/100.

(2) Fisheries and Recreation:

A (body contact recreation): Total coliform MPN 1,000/100.

B (body contact recreation: Total coliform MPN 1,000/100.

C (boating): Total coliform MPN 5,000/100.

(3) Industrial Consumption:

A (most industrial purposes without treatment): Total MPN 5,000/100.

B (general industrial purposes, with moderate treatment): Total MPN 5,000/100.

C (limited industrial purposes without high degree of treatment): Total MPN 5,000/100.

(4) Agriculture and Wildlife:

A (irrigation): Total MPN 5,000/100.

B (livestock & wildlife): Total MPN 5,000/100.

(5) Navigation and Waste Disposal: Total coliform MPN 5,000/100.

Mississippi

1. PWS: Monthly average fecal not exceed 5,000/100, nor exceed this in more than 20% of samples, nor exceed 20,000/100 in more than 5% of samples.

2. Shellfish: Meet requirements of National Shellfish Sanitation Program Manual of Operations.

3. Recreation (include body contact): Monthly average fecal not exceed 1,000/100, nor exceed this in more than 20% of the samples, nor exceed 2,400/100 at any time.

Missouri

Criteria are assigned by river basin. The criteria listed below are representative.

Mississippi River, waters designated for whole body contact: Fecal not exceed geometric mean of 200/100 ml, nor more than 10% of samples exceed 400/100 (not applicable when stream affected by storm water runoff).

Mississippi River, waters for PWS, boating, fishing: Fecal not exceed 2,000/100 (not applicable when stream affected by storm runoff).

Missouri River: Same as Mississippi River PWS, etc.

Taneycomo: Same as Mississippi River body contact recreation.

Montana

A (PWS after disinfection): Average total coliform less than 50/100.

A (PWS after disinfection & removal of natural impurities): Average total coliform less than 50/100 as result of domestic sewage.

B (PWS after treatment): Average total less than 1,000/100 where demonstrated to be result of domestic sewage; not more than 20% of samples to exceed this value.

All other classifications: Same as B.

Nebraska

A (PWS): Not exceed geometric mean 10,000/100 total coliform or 2,000/100 fecal; 20% of samples not exceed 20,000/100 total or 4,000/100 fecal.

B (full body contact sports): Not exceed geometric mean 200/100 fecal and not exceed 400/100 in more than 10% of samples.

C (agricultural, partial body contact, F & WL): Same as A.

Intermittent: Not exceed geometric mean of 20,000/100 total or 4,000/100 fecal.

Nevada	No criteria.
New Hampshire	A (highest quality; PWS after disinfection): 50/100 total.
	B (bathing): 240/100 total.
	C (recreational boating): No criteria.
New Jersey	FW-1 (natural): No man-made wastewater discharges.
	FW-2 (PWS after treatment, primary contact recreation): Fecal geometric mean 200/100.
	FW-3 (primary contact recreation): Same as FW-2.
	TW-1 (tidal--PWS, shellfhshing): Shellfish, requirements of National Shellfish Sanitation Program Manual of Operations; Others, fecal geometric mean 200/100.
	TW-2 (secondary contact recreation): Fecal geometric mean 770/100.
	TW-3 (navigation, fish survival): Fecal geometric mean, 1,500/100.
	CW-1 (ocean within 1,500 feet from shore: primary contact recreation): Fecal geometric mean 50/100.
	CW-2 (ocean beyond 1,500 feet: secondary contact recreation): Fecal geometric mean 200/100.
New Mexico	Criteria are assigned by river basin. The criteria listed below are representative.
	Pecos River (irrig. recreation, F & WL): Geometric average fecal coliform 200/100.
	Canadian River (PWS, fishery): Arithmetic average fecal 2,000/100; where body contact recreation, same as Pecos River.
New York	Bacteria criteria established by state public health agency.
North Carolina	A-1 (PWS): Monthly average total coliform 50/100.
	A-11 (PWS after treatment): Monthly average total 5,000/100, nor exceed this in more than 20% of the samples, nor exceed 20,000/100 in more than 5% of the samples. Fecal not exceed monthly log mean of 1,000/100, nor exceed 2,000/100 in more than 20% of samples (not applicable during or immediately following rainfall).
	B (bathing): Monthly log mean fecal not exceed 200/100, nor exceed 400/100 in more than 20% of samples (not applicable during or immediately following rainfall).

North Carolina

C (F & WL): Monthly log mean fecal not exceed 1,000/100, nor exceed 2,000/100 in more than 20% of samples (not applicable during or immediately following rainfall).

D (agricultural, industrial): Monthly log mean fecal not exceed 1,000/100, nor exceed 2,000/100 in more than 20% of samples (not applicable during or immediately following rainfall).

SA (shell): Median total not exceed 70/100, not more than 10% of samples exceed 230/100 (5-tube)or 330/100 (3-tube) in areas most probably exposed to fecal contamination during most unfavorable hydrographic and pollution conditions.

SB (bathing): Same as B.

SC (F & WL, boating): Same as C.

North Dakota

Criteria are assigned by river basin. The criteria listed below are representative.

Red River of the North: Monthly arithmetic average total coliform 5,000/100, nor exceed this in more than 20% of samples, nor exceed 10,000 in more than 5% of samples. Average arithmetic monthly total coliform not exceed 1,000/100 in Lake Ashtabula and Homme Dam Reservoirs.

James River (PWS, ind.,rec., F & WL): Average arithmetic monthly not exceed 1,000/100 total in the Jamestown Reservoir. Average arithmetic monthly not exceed 3,000/100 in the river nor exceed this number in more than 20% of samples, nor exceed 7,500 in more than 5% of samples.

Footnote 1, all areas: In general, waters with coliform count of 1,000/100 or less are considered relatively safe for swimming. Natural physical characteristics of the river banks and bed and natural water turbidities in the area must also be considered.

Ohio

PWS: Monthly average total coliform 5,000/100, nor exceed this in more than 20% of samples, nor exceed 20,000/100 in more than 5% of samples.

Recreation,including water contact: Monthly average 1,000/100 total coliform, nor exceed this in more than 20% of samples, nor exceed 2,400/100 on any day.

Oklahoma

Criteria are assigned by river basin. The criteria listed below are representative.

Salt Fork of Arkansas above Great Salt Plains (F & WL, recreation, PWS): Sanitary survey required for bathing & PWS waters. PWS: monthly average total coliform not exceed 5,000/100, nor exceed this in more than 20% of samples, nor exceed 20,000/100 in more

Oklahoma — 20% of samples, nor exceed 20,000/100 in more than 5% of samples. Body contact sports: Monthly average total coliform not exceed 1,000/100 during the recreational season, nor exceed this in more than 20% of samples, nor exceed 2,400/100 on any day except during periods of storm water runoff; provided, fecal not exceed geometric mean 200/100, nor more than 10% of samples exceed 400/100. Bacterial concentrations of other than natural origin will be maintained below levels detrimental to beneficial uses.

Oregon — General Water Quality Standards: No discharge which will cause in any waters: . . . (8) Bacterial pollution . . . deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or be otherwise injurious to public health. Special standards for Goose Lake, Klamath River, Multnomah Channel, Willamette River, Grande Ronde River, Walla Walla River and Snake River: Coliform where associated with fecal sources, average not to exceed 1,000/100, with 20% of samples not to exceed 2,400/100.

Special standards for Columbia River: From eastern Oregon-Washington boundary to Hwy. 5 bridge between Vancouver and Portland: Average not to exceed 240/100 fecal coliform nor exceed this in more than 20% of samples. From bridge to mouth, same as special standard for Goose Lake, etc.

Special standards for marine and estuarine water: For shellfish, median not exceed 70/100. For others, same as upper Columbia.

Pennsylvania — f_1 (includes areas of primary contact recreation): From 5/15 to 9/15, total coliforms not to exceed 1,000/100 ml monthly arithmetic average, nor exceed this number in more than 2 consecutive samples, nor exceed 2,400/100 in more than one sample.

For the period 9/16-5/14, total coliform not to exceed 5,000/100 average, nor exceed this in more than 20% of samples, nor exceed 20,000/100 in more than 5% of samples.

f_2 (includes areas of PWS and secondary contact recreation): Same as winter period of f_1.

f_3 (includes areas of secondary contact recreation): Total coliform not to exceed 5,000/100 ml monthly geometric mean.

Puerto Rico — SA (existing phenomena): No alterations.

SB (shellfish): Median value total coliform 70/100 ml.

SC (bathing): Total coliform not exceed 1,000/100 monthly median, nor exceed this in more than 20% of samples, nor exceed 2,400 on any day.

SD (marine life): Total coliform not exceed 5,000/100 monthly average.

SE (industrial); None.

Rhode Island	A (uniformly excellect, all uses): Total coliforms not to exceed median 100/100, nor more than 10% of samples exceed 500/100.
	B (primary contact recreation): Total coliforms not exceed median of 1,000/100 nor more than 2,400 in more than 20% of samples.
	C (secondary contact recreation): None in concentrations that would impair assigned uses.
	D (navigation, etc.): Same as C.
	SA (shell.): Total coliforms not to exceed median MPN of 70/100, nor more than 10% of samples exceed 230 (5-tube) or 330 (3-tube).
	SB (primary contact recreation; restricted shell. area): Total coliforms not to exceed median 700/100, not more than 2,300 in more than 10% of the samples.
	SC (secondary contact recreation; fish and shellfish habitat): Same as C.
	SD (navigation, industry, etc.): Same as C.
	n. 6: Bacteria surveys of sea waters should include sampling during periods of most unfavorable hydrographic and pollution conditions.
South Carolina	AA (PWS with only disinfection and pH adjustment): Fecal colfiorm not exceed 20/100 monthly arithmetic average.
	A (swimming): Fecal colfiorm not exceed geometric mean 200/100, nor more than 10% of samples during 30 days exceed 400/100.
	B (PWS, secondary contact recreation): Fecal coliform not exceed log mean 1,000/100 ml nor exceed 2,000/100 in more than 20% of samples (not applicable during or following rainfall).
	C (fish survival, industry, agriculture): Same as B.
	SA (shellfish): Meet U.S. PHS standards (1965 revision).
	SB (bathing): Same as A.
	SC (all uses except shellfish mkt. and bathing): Same as B.
South Dakota	1. (PWS): Total coliform not exceed MPN or MF of 5,000/100 monthly average, nor exceed this in more than 20% of samples, nor exceed 20,000/100 in more than 5% of samples.

South Dakota

2.(fish life propagation): No criteria.

3(a) (immersion sports): Fecal coliform not exceed 200/100 monthly average, nor exceed this in more than 20% of samples, nor exceed 500/100 on any day during the recreation season.

3(b) (limited contact recreation): Fecal coliform 1,000/100 monthly average, nor exceed this in more than 20% of samples, nor exceed 2,000/100 on any day during the recreation season.

4.(wildlife): No criteria.

5.(irrigation--applicable during the irrigation season only, and only to waters used to irrigate root crops and recreation areas): Fecal coliform not exceed 1,000/100 monthly average, nor exceed 2,000/100 in any sample.

6.(commerce & ind.): No criteria.

7.(intermittent stream): Total coliform not exceed 20,000/100 monthly average, nor exceed in more than 20% of samples in month; nor exceed 50,000/100 in any sample.

Tennessee

1. (PWS): Total coliform not exceed 10,000/100 monthly average (MPN or MF) nor exceed this in more than 20% of samples in month, nor exceed 20,000/100 in more than 5% of samples. Values may be exceeded provided organisms are known to be nonfecal. No disease producing bacteria or other objectionable organisms shall be added to surface waters which will result in their contamination to such extent as to render unsuitable for PWS after conventional treatment.

2. (Ind.: No critera.

3. (F & WL): No criteria.

4. (Rec.): Fecal coliform not exceed 5,000/100 monthly average, nor exceed in more than 20% of samples during month, nor exceed 20,000/100 in more than 5% of samples. For water contact rec., fecal coliform not exceed 1,000/100 in 2 consecutive samples May-Sept. Water areas near outfalls of domestic sewage treatment plants are not considered suitable for water contact recreation.

Texas

Criteria are assigned by river basin. The criteria listed below are representative. In addition, the following "General Statement" applies:

"8. Water oriented recreation, including water contact sports, is a desirable use of the waters of the state everywhere. Water contact activities in natural waters are not opposed by the state health agency where routine sanitary surveys support such activities, and where, in addition, as a flexible guide-line to be used in the light of conditions disclosed by the sanitary survey, the geometric means of the number of fecal coliform bacteria is less than 200/100

ml and not more than 10% of the samples during any 30 day period exceed 400/100. The policy is advisory only and in no way limits the responsibilities and authorities of local health agencies."

"9. It is highly desirable for waters comprising the raw water supply to a public surface water treating plant that the total coliform bacteria should not exceed 100/100 and the fecal coliform bacteria should not exceed 20/100. Nevertheless, raw water supplies to surface water treating plants shall not be deemed unsatisfactory where the total coliform organisms do not exceed 20,000/100 and the fecal coliform organisms do not exceed 2,000/100. The evaluation of raw water supplies cannot be reduced to the simple counting of bacteria of any kind and the foregoing must be used with judgment and discretion and this paragraph is not intended to limit the responsibilities and authorities of responsible local governments or local health agencies."

Galveston Bay (includes swimming and fishing): MPN log. ave. not more than 70/100 ml.

Guadalupe River Tidal (includes swimming and fishing): MPN log. ave. not more than 1,000/100.

Colorado River (including swimming and fishing): "See General Statement."

Rio Grande River (including swimming and fishing): "See General Statement."

Utah

A (PWS without treatment; recreation): Bacterial standards as prescribed for drinking water by "PHS Drinking Water Standards, 1962."

B (PWS after disinfection; recreation): Monthly arithmetic mean coliform not exceed 50/100 ml; 20% of samples may exceed this if no more than 5% exceed 100/100.

C (PWS after treatment; recreation, except not swimming unless natural purification action results in quality consistent with "CR" standard and swimming is specifically approved by state board of health): Monthly arithmetic mean total coliform not to exceed 5,000/100, except 20% of samples may exceed this if no more than 5% exceed 20,000/100, and monthly arithmetic mean coliform shall not exceed 2,000/100.

CR (swimming): Monthly arithmetic mean coliform not exceed 1,000/100; no more than 20% exceed this and no more than 5% exceed 4,000/100; and monthly arithmetic mean fecal coliform exceed 200/100, provided no more than 10% exceed 400/100.

Utah	D (limited irrigation, not including lawns, rec. areas, dairy pastures, root crops or low growing crops for human consumption): Monthly arithmetic mean coliform not exceed 5,000/100, except 20% of samples may exceed this if no more than 5% exceed 20,000/100.
Vermont	A (PWS with disinfection): Total coliform not exceed 100/100. Fecal coliform:none attributable to discharge of domestic or or industrial wastes. B (PWS with treatment;bathing): Total coliform not exceed 500/100. Fecal coliform not exceed 200/100. C (secondary contact recreation): Fecal coliform not to exceed 1,000/100. D (supporting aerobic aquatic life, nav., ind., mixing zones): Fecal coliform not to exceed 2,000/100.
Virginia	2.02. Subclasses. Subclass A (PWS, secondary contact recreation): Fecal coliform not exceed log mean 1,000/100 ml. Not equal or exceed 2,000/100 in more than 10% of samples. Monthly average total coliform not exceed 5,000/100; not more than this in more than 20% of samples; not more than 20,000/100 in more than 5% of samples.* Subclass B (PWS, primary contact recreation): Fecal coliform not exceed log mean 200/100 ml. Not more than 10% of samples exceed 400/100. Monthly average total coliform not exceed 2,400/100. Not exceed this number in more than 20% of samples. Not applicable during or immediately after rainfall.* "* With exception of coliform standard for shellfish, the enforceable standards will be those pertaining to fecal coliform organisms. The MPN concentrations are retained as administrative guides for use by water treatment plant operators." 2.05. (open ocean or estuaries where shellfish beds present): Not more than 70/100 coliform. Not more than 10% of samples greater than 230/100 (5-tube) or 330/100 (3-tube). . .
Virgin Islands	A (natural phenomena): No change. B (marine life): No criteria. C (recreation): Fecal coliform not greater than 70/100 monthly average. D (harbors and docking): Fecal coliform not greater than 1,000/100 monthly average.

Washington — Statewide use classification system plus specific criteria for specific areas.

AA Extraordinary (all uses): Total coliform not exceed median of 50 (fresh water) or 70 (marine) with less than 10% of samples exceed 230 when associated with any fecal source.

A Excellent (PWS, swimming, shellfish reprod., rearing & harvest): Total coliform not exceed median values of 240 (fresh water) with less than 20% of samples exceeding 1,000 when associated with any fecal source or same as AA (marine).

B Good (swimming, shellfish reproduction and rearing, and crustacea (crabs, shrimp, etc.) harvest): Total coliform not exceed median values of 1,000, with less than 20% of samples exceeding 2,400 when associated with any fecal source.

C Fair (comm., nav., boating): Total coliform not exceed median values of 1,000 when associated with any fecal source.

West Virginia — Criteria are assigned by river basin.
Majority of river basins: Total coliform not to exceed 1,000/100 monthly average, nor exceed this in 20% of samples, nor exceed 2,400/100 on any day.

Kanawha River, Zone 2 (present*), certain Bluestone River tributaries (present *) and Youghiogheny River (present and future*): Total coliform not to exceed 5,000/100 monthly average nor exceed this in more than 20% of samples nor exceed 20,000/100 in more than 5% of samples.

*Present uses and criteria to exist for a maximum of 5 years; future uses and criteria will exist after suitable abatement is affected. Correspondence from W. Virginia Water Resources Board, October 10, 1967.

Wisconsin — (2) (PWS): Total coliform not to exceed 5,000/100 monthly arithmetic average nor exceed this in more than 20% of samples, nor exceed 20,000/100 in more than 5% of samples.

(4) (Recreation): Sanitary survey and/or evaluation to assure protection from fecal contamination is the chief criterion. Additional "Guidelines" as follows:

(a) Whole body contact: Arithmetic average total coliform 1,000/100 or less and maximum not exceeding 2,500/100 during the recreation season.

(b) Partial body contact: Arithmetic average total coliform 5,000/100 or less and no more than 1 of last 5 samples exceeding 20,000/100 during the recreation season.

Wyoming	State established "Basic Water Quality Standards" plus standards for individual rivers.
	Basic Standard: During recreation season (May 1-Sept 30), limited body contact use: Fecal coliform, no samples shall exceed the 95% confidence limit of the historical average, in no case may geometric mean of last 5 samples exceed 2,000/100, whichever is the least.
	Criteria assigned to specific areas: Fecal coliform not to exceed 240/100 as geometric mean of least 5 samples, nor exceed 250/100 in any one sample.